REMARKS

Status of the Claims

Claims 1-11, 16, 17, and 19 are pending and under consideration in this application. All the pending claims stand rejected.

35 U.S.C. § 102(e) rejection

Claims 16 and 17 stand rejected as allegedly being anticipated by U.S. Patent Application Publication No. 2002/0038152 A1 (the '152 application). Applicant respectfully traverses the rejection.

From the comments on page 2, lines 16-19, of the Office Action, Applicant understands the Examiner's position to be that the '152 application discloses the methods specified by claims 16 and 17. Applicant disagrees with this position.

In the Amendment and Response filed July 8, 2004, Applicant incorporated the embodiments specified by claim 21 into claim 16. In that claim 21 had not been rejected in view of the '152 application in the Office Action of January 8, 2004, Applicant understood that the Examiner considered the claim not anticipated by the '152 application. Applicant submits that the Examiner was entirely correct in this consideration because, while the '152 application does tangentially refer to treatment of "unilateral vocal cord paralysis" with processed extracellular matrix (paragraph 0074), it does not disclose or even remotely suggest that the extracellular matrix be placed in a scar, Reinke's space, a muscle of the vocal cord, or the lamina propria as was required by claim 21 and is now required by claim 16. The Examiner has not indicated in the present Office Action why he believes that the above-described amendment of claim 16 did not overcome the rejection of claims 16 and 17 in view of the '152 application.

In light of the above considerations, Applicant respectfully requests that the rejection under 35 U.S.C. § 102(e) be withdrawn.

35 U.S.C. § 103(a) rejections

(a) Claims 1-4, 6-9, 11, and 19 stand rejected as allegedly being unpatentable over U.S. Patent No. 5,591,444 (the '444 patent) in view of U.S. Patent No. 3,949,073 (the'073 patent). Applicant respectfully traverses the rejection.

The Office Action repeats essentially verbatim the remarks in the Office Action of January 8, 2004, without addressing the arguments presented by Applicant in the Amendment and Response filed July 8, 2004.

Applicant respectfully submits that neither reference contains the necessary motivation to persuade one of ordinary skill in the art to combine their respective disclosures and hence to treat vocal cord defects with autologous cultured cells.

First, the '444 patent discloses only the treatment of skin defects (e.g., column 3, lines 21-26). There is no teaching or even the slightest suggestion of using its method to treat any internal organ or tissue, let alone vocal cords. Indeed, it is an entirely different matter to inject living cells into an internal organ from injecting it into skin and it would not have occurred to one of ordinary skill in that art at the priority date of the instant application reading the '444 patent to adapt its skin therapeutic methods to the treatment of internal organs or tissue such as vocal cords. In addition, the Background section of the '444 patent provides an extensive description of the disadvantages of using collagen for a variety of corrective procedures. Thus, one ordinarily skilled in the art reading the '444 patent would not look to references (such as the '073 patent) describing the use of collagen for treatment of any condition, let alone one involving an internal organ such as vocal cord.

The '073 patent discloses the treatment of a variety of conditions (including unilateral vocal cord paralysis) with a collagen solution but does not disclose, or even remotely suggest the desirability of, using anything other than collagen for the treatment of any of the conditions it mentions. In particular, the reference contains not the least suggestion of using cells of any type, let alone cultured cells, for treating such conditions. Thus, the '073 patent does not provide the slightest motivation to one of ordinary skill in the art to look to the disclosure of the '444

provide patent for guidance on how to treat the conditions that the '073 patent discloses, e.g., unilateral vocal cord paralysis.

Moreover, in the unlikely event that such an artisan were motivated by either of the cited references to look to the other for conditions to which the methods disclosed by the two references could be applied, the single cryptic mention in the '073 patent to vocal cord treatment (column 4, lines 3-4) would not have persuaded him or her to treat vocal cords with cultured fibroblasts. In addition, the minimal cumulative teachings of the two references in regard to such a treatment would constitute at best a mere invitation to try without the least expectation of success. The courts have indicated that, in order to sustain a rejection for obviousness, there must be a reasonable expectation of success of a method allegedly taught by a combination of references (see MPEP § 2143.02 for citations to relevant cases).

(b) Claims 1, 2, 5, and 19 stand rejected as allegedly being unpatentable over U.S. Patent No. 5,633,001 (the '001 patent) or U.S. Patent No. 5,922,025 (the '025 patent) in view of U.S. Patent No. 5,041,138 (the '138 patent). Applicant respectfully traverses the rejection.

From the comments on page 4, lines 1-10, of the Office Action, Applicant understands the Examiner's position to be that the '001 patent, or the '025 patent, would, in view of the disclosure of the '138 patent, motivate one of ordinary skill in the art to treat a vocal cord defect with cultured adipose tissue (fat) cells. Applicant disagrees with this position.

The Examiner refers to "lines 8-28 of col. 28" of the '001 patent as containing the teaching relevant to the rejection. Applicant assumes that this reference is an inadvertent error since the '001 patent contains only six columns and that the text of the '001 the Examiner intended to refer to is actually lines 8-28 of column 1. Applicant believes the latter text to be the only text in the '001 patent mentioning fat. Applicant submits that it is not at all clear what is meant by the term "fat cell cartilage" in this text (column 1, line 23). One ordinarily skilled in the art would not understand the text to be disclosing the use of fat cells *per se* for the augmentation of tissues and would more likely consider the term to be referring to the use of some component derived from fat cells.

Applicant respectfully submits that neither the '025 patent nor the '138 patent contains the necessary motivation to persuade one of ordinary skill in the art to combine their respective disclosures and hence to treat vocal cord defects with autologous cultured cells.

While the '025 patent does disclose the use of fat tissue as an implantable material for vocal cord medialization, as acknowledged by the Examiner (Office Action, page 4, lines 3-4), it does not teach the use of cultured fat cells. The above-mentioned disclosure of the '025 patent is in the Background section of the patent and is part of a description of "prior art" compositions used for tissue augmentation. The main thrust of the '025 patent is not cell-containing tissue augmenting compositions but rather an implantable/injectable ceramic augmentation material (Abstract and column 5, lines 35-52) that is not taught by the '025 patent to used with any cells at all, let alone cultured cells. On the other hand, the '138 patent discloses structures made from biocompatible synthetic polymers that can be *per se* be implanted or on which cells can be grown to create a cell-containing matrix that is implanted (see, e.g., the Abstract). One of ordinary skill in the art interested in the principal subject matter of the '025 patent would not be considering the use of cells at all. Moreover, an ordinarily skilled artisan reading the Background section text relating to the use of fat for vocal cord treatment would have no interest in looking to a reference describing implantable synthetic polymer matrices. In that the latter text contains not the least suggestion of using a support matrix with fat, an ordinarily skilled person reading it would not be motivated to turn to a reference describing the use of such matrices.

Nevertheless, even if one ordinarily skilled in the art reading the '025 patent were to look to the '138 patent, such an artisan would not be motivated to culture fat tissue prior to using it to treat a vocal cord defect. While the '138 patent, as indicated by the Examiner (Office Action, page 4, lines 4-6), teaches that cells can be cultured prior to implantation in order to obtain a volume and density of cells adequate to survive and proliferate in vivo after implantation ('138 patent, column 3, lines 29-34), it also points out that "when adequate cell numbers of for implantation are available, the cells can be attached to the matrix and implanted directly, without proliferation in vitro." (column 3, lines 34-37). The'025 patent contains no suggestion that fat tissue is available only in small amounts such that it would desirable to expand the cells in vitro

prior to implantation in vocal cords. Indeed, vocal cords are relatively small organs and autologous fat tissue is, for any given species, present (and available for grafting into vocal cords) in relatively large amounts.

(c) Claim 10 stands rejected as allegedly being unpatentable over the '444 patent in view of the '073 patent and further in view of U.S. Patent Application Publication No. 2004/0156833 (the '833 application). Applicant respectfully traverses the rejection.

In that claim 1 is not obvious over the '444 patent in view of the '073 patent (see above), claims dependent on claim 1 (such as claim 10) are also not obvious in view of the two references. Moreover, the '833 application (that discloses vascular grafts composed of a porous material to which are attached smooth muscle cells transduced with a gene of interest and endothelial cells) does not remedy the defects of the '444 and '073 patents in this regard.

Applicant respectfully submits that, even if instant claim 1 was obvious in view of the '444 and '073 patents, neither they nor the '833 application contain the requisite motivation to combine their respective disclosures and thence perform the culturing step of claim 1 in autologous serum-containing culture medium, as specified by claim 10.

In light of the above considerations, Applicant respectfully requests that the rejections under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

In summary, for the reasons set forth above, Applicant maintains that all of the pending claims patentably define the invention. Applicant requests that the Examiner reconsider the rejections as set forth in the Office Action and permit the pending claims to pass to allowance.

If the Examiner would like to discuss any of the issues raised in the Office Action, Applicant's undersigned representative can be reached at the telephone number listed below.

Enclosed is a petition for an automatic extension of time and check in payment of the extension of time. Please apply any additional charges or credits to Deposit Account No. 06-1050, referencing Attorney Docket No. 15092-022002.

Respectfully submitted,

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